What is claimed is:

1. A metal polishing pad having a functional group which captures a metal ion.

2. The polishing pad according to Claim 1, wherein the functional group which captures a metal ion contains at least one atom selected from the group consisting of oxygen atom, nitrogen atom, sulfur atom, phosphorus atom, arsenic atom and selenium atom.

3. The polishing pad according to Claim 1, wherein the functional group which captures a metal ion is at least one group selected from the group consisting of

-OH, -COOM, >C=O, -O-, -COOR, $-CONH_2$, -NO, $-NO_2$, $\equiv N-O$, $-SO_3M$, -PHO(OM), $-PO(OM)_2$, $-AsO(OM)_2$, $-NH_2$, >NH, $\equiv N$, -N=N-, >C=N-, >C=N-OH, >C=NH, -SCN, -SH, -S-, >C=S, -COSM, -CSSM, $-CSNH_2$, -NCS, >P-, >As-, -SeH, >S=Se, -CSeSeM

wherein, M represents hydrogen atom, alkali metal, alkaline earth metal or ammonium group, and R represents hydrocarbon.

4. The polishing pad according to Claim 1, wherein the pad comprises an ion exchange resin, or ion exchange fiber.

5. The polishing pad according to Claim 1, wherein the pad comprises a chelate resin, or chelate fiber.

6. The polishing pad according to Claim 1, wherein the metal is a copper-based metal.

7. A metal polishing apparatus comprising a metal polishing pad according to Claim 1.

8. A polishing apparatus comprising an apparatus of contacting a polishing subject having a metal surface with a confronting polishing pad according to Claim 1 and applying pressure uniformly between them, an apparatus of rotating or transferring a polishing subject and a polishing pad while maintaining contact between them, and an apparatus of feeding a polish promoting agent for promoting polishing into between a polishing subject and a polishing pad.

9. The polishing apparatus according to Claim 8, wherein the polish promoting agent contains an oxidizer.

10. The polishing apparatus according to Claim 7 further comprising a functional group regeneration treatment apparatus of contacting a regenerating agent which regenerates a functional group deactivated by capturing a metal with a polishing pad according to Claim 1 after polishing a polishing subject.

11. The polishing apparatus according to Claim 10, wherein the regenerating agent is an acidic aqueous solution or an alkaline aqueous solution.

12. The polishing apparatus according to Claim 7, wherein the metal is a copper-based metal.

13. A method for polishing a metal by chemical mechanical polishing with a metal polishing apparatus according to Claim 7.

14. A method for polishing a metal comprising the steps

of

rotating or transferring a polishing pad, a polishing subject, or both of them while keeping the condition of the polishing pad according to Claim 1 pushed to the polishing subject having a metal surface, and

feeding a polish promoting agent between the metal surface and polishing pad.

15. The method according to Claim 14, wherein the polishing pad is a pad regenerated by a functional group regeneration treatment apparatus according to Claim 10.

16. The polishing method according to Claim 13, wherein the metal is a copper-based metal.